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NOTES ON GENERA OF PANICEAE. II.*

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The two genera, *Hymenachne* and *Sacciolepis*, discussed in the present paper, while not very closely related, have been confused because of the similarity in the form of the inflorescence of most of the species in each, a spike-like panicle.

GENUS HYMENACHNE Beauv. 1812, Agros. 48. t. 10. f. 8.

"Axis paniculatus: Panicula simplex, *spicæformis: Rami conferti.*— Glumæ inæquales, herbaceæ, acutæ: infer. multo brevior. FLOSC. INFER *neut.:* Palea infer. acuta: super. brevissima, *membranacea, hyalina.*— FLOSC. SUPER. hermaphroditus: *Paleæ herbaceæ membranaceæ* acutæ.* * * SPEC. Agrostis *myuros* Lam. *monostachya* POIR."

The illustration represents the second species mentioned by Beauvois, *Agrostis monostachya* Poir., which according to the American Code,† should therefore be taken as the type of the genus, although Beauvois gives the name *Hymenachne myuros* in the explanation of plate 10, showing that he misunderstood Lamarck's species.

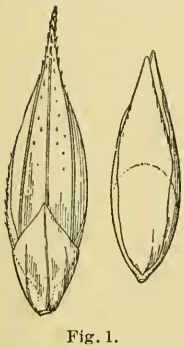

Fig. 1.
Hymenachne amplexicaulis.

Agrostis monostachya Poir. 1810, Encyc. Suppl. 1: 256. "Cette plante a été recueillie à Porto-Ricco, par M. Riedle. (*V. s. in herb. Desfont.*)"

The type labeled in Poiret's hand, "Agrostis monostachya Poir. enc. sup. Reidel Porto-Ricco," was examined by Professor A. S. Hitchcock‡ in the Desfontaine herbarium at Florence. The accompanying figure is drawn from this specimen.

Panicum myuros Lam. (incorrectly given as *Agrostis myuros* Lam.) cited by Beauvois under *Hymenachne* is not the same species as *Agrostis monostachya* Poir., as most subsequent authors seemed to think. The type of this was seen in Lamarck's herbarium in Paris,

* Notes on Paniceae I, with general discussion of the importance of the fruit as a generic character in this tribe appeared in Proc. Biol. Soc. Wash., 19: 183-192. Dec. 1906.

† Canon 15, b.

‡ All the type specimens definitely mentioned as found in the different European herbaria were examined by Professor A. S. Hitchcock in the spring of 1907.

and was found to be a congener of *Sacciolepis striata* (L.) Nash., *Panicum indicum*, and allied species.

Beauvois emphasizes the simple spike-like panicle, and also the real distinguishing character of the genus, the membranaceous lemma and palea, to which latter character the name refers, "De ὑμὴν" Membrana; "ἄχνη Palea." But, probably because he did not know Lamarck's species, Beauvois included in *Hymenachne P. myuros* which does not have a membranaceous lemma and palea. Subsequent authors have placed in the genus or section *Hymenachne* various *Panicum* allies having a spike-like panicle, but often without other similarity. It is not evident whether Beauvois considered the two species he cites synonymous or not. In the index only *Hymenachne myuros* is given; *A. monostachya* is not formally transferred and is not mentioned in the index.

Roemer & Schultes (1817, Syst. 2: 25) maintain this and others of Beauvois' new genera without comment.

Trinius (1820, Fund. Agros. 176) upholds *Hymenachne* as a genus with one species, *myurus*, though *Digitaria*, *Monachne* and other genera are included in *Panicum*. Trinius adds the note: "Obs. *Panicis maxime affinis. An hujus generis* (forte tunc *emendandi*) Andropogon insularis L.?" which seems to indicate that he gave greater weight to the membranaceous fruit than to the spike-like panicle. This is assuming that Trinius supposed *H. myurus* and *A. monostachya* to be synonyms. Later (1826. Gram. Pan. 51) Trinius places *Hymenachne* together with *Trichachne*, *Setaria*, *Pennisetum* and other genera in *Panicum* under the following synoptical division "e) Thyrsus (simplex vel compositus), aut Racemi compositi longe plerumque sparsi et jubati. Spiculæ oblongæ l. lanceolatæ, pl. min. inæqualiter dispositæ. Gluma inferior manifesta (*Jubaria*).*)" ["*Species quarum radii, quantumvis racemos mentientes, radiolos, distinctos emittunt, ad sectionem sequentem Miliariam referuntur."] This gives a wholly artificial grouping based solely on the narrow panicle and includes *Chætochloas*, various true *Panicums* and allies. *Jubaria* (l. c. p. 159–183) is subdivided into four groups, the third of which, "* * * Thyrsi pl. min. compositi spiculæ basi nudæ (absque involucello)" includes *Panicum indicum* L., *P. viroides* Trin., *P. gibbum* Ell. (which belong in *Sacciolepis*), and *P. amplexicaule* Rudge (true *Hymenachne*) under which *Hymenachne myuros* Beauv. and *Panicum myuros* Kunth "(nec Lam.)" are given as synonyms. Trinius observes "Lamarckii gramen, cui 'folia angusta, convoluta' certe huc non pertinet." But *Panicum myuros* Lam. and *P. amplexicaule* continued to be considered synonymous by other authors. Under his fourth division of *Jubaria* Trinius includes *Panicum palustre* Trin. (a true *Hymenachne* having a racemose panicle) between *Panicum leucophæum* Kunth (which is *Valota*) and *P. plicatum* Lam., which belongs in section *Ptycophyllum* of *Panicum*. These details are given only to show that the cause of confusion was the form of the inflorescence.

Nees (1829, Agros. Bras. 273) recognizes *Hymenachne* as a genus, but like Trinius groups with it the allies of *Panicum gibbum* Ell., though he places the following observation after them: "Hac in specie ac in præce-

dente [*H. fluviatilis*, which is the same as *Panicum vilvoides* and *H. campestris*] flosculus hermaphroditus glumis et neutro flosculo brevior est multo, non vero herbaceus ut in *H. myuro*, sed subcartilagineus." *Panicum paludicola* Nees, a *Hymenachne*, and *P. striatum* Lam., a *Sacciolepis*, are given among true *Panicums*.

Desvaux (1831, Opus. 82) transfers *Agrostis monostachya* Poir. to *Panicum*, changing the name to *P. Hymenachne* Desv. He observes that this plant had been confounded with Agrostis [Panicum] myuros, which was very different.

Kunth (1833, Enum. Pl. 1: 86) under division 5 includes a miscellaneous group of *Sacciolepis*, *Hymenachne*, *Eriochloa* and other allies, as well as several species of *Panicum* itself.

Trinius (1883, Pan. Gen. 165) includes about the same group under his section *Virgaria* of *Panicum*.

Nees (1841, Fl. Afr. Aust. 50.) makes a section *Curviflora* of *Panicum* for two species of *Sacciolepis*.

Steudel (1854, Syn. Pl. Glum. 2 : 101) includes in the genus *Hymenachne* four names referable to *Sacciolepis*, and two (which are, however, synonyms) to *Hymenachne;* a seventh species, which is probably a *Sacciolepis*, he includes with the mark of doubt.

Grisebach (1864, Fl. W. I. 553) includes in the genus *Hymenachne* one species which belongs there and two which belong to *Sacciolepis*.

Doell (1877, Mart. Fl. Bras. 2^2: 231) in the first part of the section *Miliaria* of *Panicum* gives seven species, five of which are referable to *Sacciolepis*, one to *Hymenachne*, and one probably to *Steinchisma*. *Panicum auriculatum*, a *Hymenachne* with ascending, not oppressed, panicle branches, is placed in the second part of the section in which most of the species are true *Panicums*. It is worthy of note that Doell uses the name *Panicum myuros* Lam. for the species to which the type really belongs, stating that he saw the specimen in the Paris Museum. Under *Panicum amplexicaule* Rudge, he straightens out the hitherto confused synonomy of this species.

Bentham (1878, Flora Australiensis 7: 465) makes a section *Myuroideæ* of *Panicum* under which he places three species, two of which belong in *Sacciolepis* and one in *Hymenachne*.

Fournier (1881, Mex. Pl. 2: 36) includes eight species in the genus *Hymenachne*, two of which are referable to *Sacciolepis*, three to *Hymenachne*, and two to *Panicum*. The remaining species, *H. Gouini* Fourn., unknown to us, is probably a *Hymenachne*.

Hackel (1887, Engler & Prantl. Pfl. Fam. 2^2: 35) recognizes *Hymenachne* as a section of *Panicum* with spike-like panicles and slightly indurated glumes. No species are mentioned.

Hooker (1896, Fl. Brit. Ind. 39) places seven species under *Hymenachne* as a section of *Panicum*, three of which are referable to *Hymenachne* and four to *Sacciolepis*.

Stapf (1898, Flora Capensis 386) makes a section *Vilfoideæ* for three species referable to *Sacciolepis*.

Description.—Spikelets short-pediceled, crowded in slender racemes

which are erect, forming a dense spike-like panicle, or narrowly ascending; spikelets lanceolate, acuminate; first glume ⅓ to ½ as long as the spikelet, remote, a distinct stipe below the second glume; sterile lemma 5-nerved, acuminate, exceeding the lanceolate stramineous fruit; lemma and palea membranaceous, margins of the lemma thin (not broad and hyaline), not enrolled; palea not inclosed above; grain oblong, at maturity readily falling from the open lemma and palea. Perennial aquatic or semi-aquatic grasses, decumbent at base and rooting at the lower nodes, with rather stout simple stems and long lanceolate blades cordate-clasping at base, except in *Hymenachne montana*. Species seven or eight, confined to the tropics and subtropics.

**Panicles elongated, spike-like.*

HYMENACHNE AMPLEXICAULIS (Rudge) Nees 1829, Agrost. Bras. 276, based on the next.

Panicum amplexicaule Rudge 1805, Pl. Guian. 1: 21. t. 27. Type "ex herb. Rudge" in the British Museum.

Agrostis monostachya Poir. 1810, Encyc. Suppl. 1: 256. (See note above on type.)

Panicum Hymenachne Desv. 1831, Opus. 82. Based on *Agrostis monostachya* Poir.

Panicum myuros of authors not Lam.

In the tropics and subtropics of western hemisphere.

HYMENACHNE PATULA Fourn. 1881, Mex. Pl. Gram. 37. "Bejucal in insula Cuba (Liebm. n. 402.)"

A specimen of this number from Fournier is in the herbarium of the Botanical Garden at Copenhagen. The panicle is less dense than in the preceding.

Known only from Cuba.

HYMENACHNE PSEUDO-INTERRUPTA C. Muell. 1861, Bot. Zeit. 19 : 333. "India orientalis, Bengalia et Malacca. Griffith."

Specimens in the National Herbarium from India, Malacca and Java answer to Mueller's description. They differ from *H. amplexicaulis* in having blades narrowly cordate at base, long-attenuate or involute above; and in the longer spikelets with longer-pointed glumes. Nees' description of *P. auritum* Presl (ex Nees 1829, Fl. Bras. 2: 176) seems to apply to this species, but we have not seen the type of either.

HYMENACHNE MONTANA Griseb. 1879, in Goett. Abh. 24 : 307. "C ["C = Prov. Cordoba und Santiago del Estero." l. c. 4.] S. Achala." The type is in Grisebach's herbarium at Göttingen, labeled "Achala, Hieronymus 640."

An anomalous species, bearing about the same relation to the typical species that *Panicum Chapmanii* Vas. and related forms bear to *Eupanicum*. A few of the lower spikelets are subtended by a scabrous bristle (a sterile pedicel); first and second glumes sub-equal, much shorter than the sterile and fertile lemmas; fruit as in the type species, except that it is slightly indurated.

Argentina.

***Panicle long and narrow with ascending branches, not spike-like.*

Hymenachne auriculata (Willd.).

Panicum auriculatum Willd. 1825, ex Spreng. Syst. 1 : 322. "Amer. austr." The type, labeled "Amer. merid. Humboldt," is in the Willdenow herbarium, Berlin.

Panicum polystachyum Presl 1830, Rel. Haenk. 1: 312. "Hab. in Peruvia." (Not *P. polystachyum* Schult. 1824, Mant. 2: 146.) The type, in the Presl herbarium in the National Museum, Prag, is labeled "Regno montana, Peru."

Brasil and Peru.

Hymenachne palustris (Trin.).

Panicum palustre Trin. 1826, Gram. Pan. 181. "V. spp. Brasil. (Langsdorff.)" The type bearing the label "Panicum palustre m. Brasil Langsdorff. In fossis serra dos Orgonos," is in the Trinius herbarium, in the St. Petersburg Academy of Sciences.

Panicum paludicola Nees in Trin. l. c. as synonym sub *P. palustre*; 1829, Agros. Bras. 179. The specimen in Trinius' herbarium is cited and *Panicum palustre* Trin. is given as synonym.

In the Icones 2, *pl. 218*, Trinius reduces *P. palustre* to a synonym of *Panicum frondescens* Meyer, but from Meyer's description and a specimen from Brasil determined by Nees this seems to be a species related to *Panicum stoloniferum* Poir. Plate 218 is drawn from a Brasil specimen, and agrees with the specimens of *P. palustre* in Trinius' herbarium.

Panicle less dense than in the preceding, spikelets larger.

Brasil.

Two species represented in the National Herbarium, one from Uruguay and one from the Philippines, remain to be identified with published names or to be described.

The following species should be excluded from *Hymenachne*, to which genus they have been referred by various authors:

Hymenachne boiviniana Steud. . . . . = Sacciolepis?
Hymenachne campestris Nees . . . . . = Sacciolepis.
Hymenachne fluviatilis Nees. . . . . = Sacciolepis.
Hymenachne frondescens (Meyer) Fourn. . . = Panicum.
Hymenachne indica (L) Buese . . . . = Sacciolepis.
Hymenachne interrupta (Willd.) Buese . . = Sacciolepis.
Hymenachne leptostachya (Presl) Fourn. . . = Panicum?
Hymenachne myosuroides (R. Br.) Balansa = Sacciolepis.
Hymenachne myosurus (Rich.) Nees . . . . = Sacciolepis.
Hymenachne myuros (Lam.) Beauv. . . = Sacciolepis.
Hymenachne phalaroides (R. & S.) Nees . . = Sacciolepis?
Hymenachne phleiformis (Presl) Fourn. . . = Sacciolepis.
Hymenachne polymorpha Balansa . . . . . = Sacciolepis?
Hymenachne striata (Lam.) Griseb. . . . . = Sacciolepis.

None of the above species is here transferred.

GENUS SACCIOLEPIS NASH 1901, BRITT. MAN. 89.

"A perennial grass with flat leaves and a terminal contracted panicle. Spikelets numerous, readily deciduous when mature, 1-flowered, articulated to the pedicel below the empty scales. Scales 4, the outer 3 membranous, the first scale small, the second one much larger than the rest, many-nerved, strongly saccate at the base; fourth scale much shorter than the third, chartaceous, enclosing a palet of similar texture and a perfect flower. * * * [Greek, in reference to the large saccate second scale of the spikelet.]."

The only species given under the genus is *Sacciolepis gibba* (Ell.) Nash (l. c.), based on the following:

Panicum gibbum Ell. 1817, Sk. Bot. S. C. and Ga. 1: 116. No specimen is cited. The type in the Elliott herbarium in the College of Charleston, consists of a single culm with three leaves and an over-mature panicle. The label in Elliott's writing reads: "Panicum gibbum mihi. flor. Aug. Sept. Car. Georg. in locis udis."

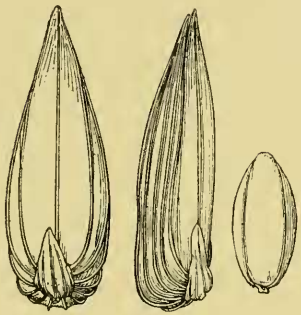

Fig. 2.
Sacciolepis gibba.

Nees (1841, Fl. Afr. Aust. 50) establishes a division *Curviflora*; Bentham (1878, Fl. Austral. 7: 480) a series *Myuroideæ*; and Stapf (1898, Flora Capensis 386) a section *Vilfoideæ* for species referable to this genus. For the history of the disposition of this group by various authors, see the notes under *Hymenachne*.

Description.—Spikelets short-pediceled on short usually erect racemes forming dense spike-like panicles (except in *P. curratum* L.), spikelets oblong-conical; first glume small, second glume broad, inflated-saccate, strongly many-nerved; sterile lemma narrower, flat, fewer-nerved, its palea nearly as long, often subtending a staminate flower; fruit stipitate, elliptical, the lemma and palea chartaceous-indurated, the margins of lemma inrolled, the palea not enclosed at the summit. Grasses of wet ground; culms usually branching, and rooting at the lower nodes.

SACCIOLEPIS STRIATA (L.) Nash 1903, Bul. Torr. Bot. Club, 30: 383.

Holcus striatus L. 1753, Sp. Pl. 1048. "Habitat in Virginia paludibus." The type in the Linnean herbarium is "a Gronovius plant numbered 59, upon which Linnaeus has written '7 striatus.'"*

Panicum striatum Lam. 1791, Tab. Encyc. 1: 172. "Carolina. Com. D. Fraser." The type labeled "de la Caroline, fraser, panicum striatum lam." is in the Paris herbarium. Though the same specific name is used it appears that Lamarck did not know *Holcus striatus* L.

Panicum gibbum Ell. 1817, Sk. Bot. S. C. and Ga. 1: 116. (See above.)

Panicum Elliottianum Schult. 1824, Mant. 2: 256. Based on the preceding, the name being changed because of *P. gibbosum* Brown.

* Fide Hitchcock, in note book.

Panicum aquaticum Bosc ex Spreng. 1825, Syst. 1: 319. "Ins. Bermud." A duplicate type was seen in the Webb herbarium in Florence.

Sacciolepis gibba (Ell.) Nash 1901, Britt. Man. 89. (See above.)

Sacciolepis myuros (Lam.)

Panicum myuros Lam. 1791, Tab. Enc. 1: 172. (Misprinted "myruos," but corrected in Enc. 4: 748.) "Ex America merid. Comm. à D. Richard." The type in the Lamarck herbarium in Paris is labeled in Lamarck's handwriting "de Cayenne Leblond Panicum myuros lam. ill. gen." In the Encyclopédie (4: 748) the specimen is said to come from Cayenne, communicated by Richard and Leblond.

Fig. 3.
Sacciolepis myuros.

Since this species has been so generally misunderstood a spikelet from the type is illustrated here to show the generic relationship.

Panicum myosurus Rich. 1792, Act. Soc. Hist. Nat. Par. 1: 106. No specimen is cited, but the name is published with a brief diagnosis in a "Catalogus plantarum * * * e Cayenna missarum a Domino Le Blond." The type is in the Paris herbarium. It is a somewhat larger specimen than the preceding type.

This species is represented in the National Herbarium by *Liebmann Mex. Gram. No. 146.*

?*Panicum phleiforme* Presl 1830, Rel. Haenk. 1: 302. "Hab. in Mexico." There are two specimens on the sheet labeled "Panicum phleiforme nov. sp. J. S. Presl" in the National Museum at Prag, one ticketed Mexico, the other Luzon. The Mexico specimen is small and slender, but may be referable to *S. myuros;* the spikelets agree with those of Lamarck's specimen, except that they are less acute. *Pringle 2363,* Jalisco, Mex., distributed as *P. indicum* L., seems to be the same as Presl's specimen. More material may show this form to be distinct.

Sacciolepis vilvoides (Trin.).

Panicum vilvoides Trin. 1826, Gram. Pan. 171. "Hymenachne fluviatilis N. ab Es! in Mart. Fl. Bras. ined. V. spp. Gujan. Brasil. (Fischer N. ab Esenb.)" In the Trinius herbarium there are two specimens in the cover marked "Panicum vilvoides m." One is labeled "Panicum vilvoides m. Hymenachne fluviatilis N. ab Es. sub quo nom. mis in Brasil. lectu an. N. ab." The other is labeled "Panicum (Hymenachne) vilvoides Trin. Guyan française." Fischer's name does not appear on either. Since Trinius indicated by "m" or "mihi" the specimen he named, the first specimen mentioned above may be taken as the type. The second specimen is *S. myuros.*

Hymenachne fluviatilis Nees 1826, in Trin. (l. c.) as synonym sub Panicum vilvoides Trin. 1829, Fl. Bras. 273 "Panicum vilvoides Trin. in litt., ex Herb. cl. Fischeri." is cited.

This species is represented in the National Herbarium by *Edwall 1066* S. Paulo, Brasil. Other specimens apparently belonging to the same species have spikelets hirsute at the summit.

Sacciolepis strumosa (Presl).

Panicum strumosum Presl 1830, Rel. Haenk. 1: 303. "Hab ad Monte-Rey Californiæ." The type in the Presl Herbarium is labeled "Panicum strumosum nov. sp. J. S. Presl"; a second slip reads "Regno montanæ, Haenke." The published locality is clearly a mistake; no species of this group have been found in California. This species is represented in the National Herbarium by *Burchell 4420*, Brasil.

Sacciolepis indica (L.)

Aira spicata L. 1753. Sp. Pl. 63. "Habitat in India." In the Errata at the end of Vol. 2 "spicatum" is changed to "indicum," presumably because of another *Aira spicata* on page 64. "The specimen in the Linnean herbarium is a delicate creeping or spreading plant with many spikes about 1 cm. long with only a few spikelets"—[Hitchcock in notebook]. It is labeled in Linnaeus' hand "Panicum indicum." *Aira* has been scratched, and *indica* changed to *indicum*.

Aira indica L. 1753, Sp. Pl. in Errata; 1762, Sp. Pl. ed. 2, 94.

Panicum indicum L. 1771, Mant. 2: 184. Based on "Aira indica Sp. plant 94" (the reference is to the second edition).

Hymenachne indica (L.) Buese 1854, in Miq. Pl. Jungh. 377. Based on *Panicum indicum* L.

Of the several species in the National Herbarium from India received as *Panicum indicum* L., that represented by *Duthie 10,003* from the herbarium of Prof. Hackel seems to be the true *P. indicum*.

Sacciolepis curvata (L.).

Panicum curvatum L. 1767, Syst. Nat. ed. 12: 732. "Habitat in Suratte."

?*Panicum coryophorum* Kunth 1831, Rev. Gram. 2: 387. t. 107. "Crescit in Madagascaria." Communicated by Aubert du Petit-Thouars. Kunth remarks that while the description of *P. curvatum* L. might include his species, it is nevertheless too brief to convince him of the identity of the two, especially since one is from India and the other from Madagascar. The Madagascar specimen in the National Herbarium agrees perfectly with Kunth's figure, but the identity of *P. curvatum* L. and *P. coryophorum* Kunth can only be determined by a study of the types. The two are considered synonymous by Hooker, Stapf and others. This is the only known species with an open panicle. The spikelets closely resemble those of the type species, *S. gibba*.

The following species which belong in this genus are not here transferred for lack of complete data:

Panicum rigidifolium Trin. 1829, Sp. Gram Ic. 2. t. 214. "Figura ad specimen Brasiliense." The type in Trinius herbarium, St. Petersburg, is labeled "Panicum rigidifolium m. 4 Brasil. Langsdorff."

This is an outstanding species with a fruit larger in proportion to the size of the spikelet than in any other species. It is not here transferred because of uncertainty as to the oldest tenable name. Kunth (1833, Enum. Pl. 1: 88) changes the name of *P. rigidifolium* Trin. to *Panicum*

Trinii Kunth because of *P. rigidifolium* (Poir.) Kunth (May 2,* 1829, Rev. Gram. 1: 37). Both names thus date from 1829, and we have not been able to ascertain which is the earlier. An older name than either may apply to this species. Doell (1877, Mart. Fl. Bras. 2^2 : 236) uses *Panicum diœcum* Spreng. (1825, Syst. 1 : 322) for this species, citing "*Panicum melicoides Nees ab Esenb. secundum specimena authentica, vix Poiret.*" Sprengel's description is very brief, and does not seem to apply to this species; the spikelets are said to be diœcious and the leaves lanceolate. The native country is indicated as unknown, and "P. melicoides et poæforme Poir." are cited as synonyms. Nees (1829, Agros. Bras. 191) describes this species under *Panicum melicoides* Poir., giving *Panicum diœcum* Spreng. as a synonym. Since Nees might be expected to have seen Sprengel's specimen it may be that Sprengel's name belongs to this plant, notwithstanding the inapplicable description. The original description of *P. melicoides* Poir. (1816, Encyc. Suppl. 4: 283) could hardly apply to this species. Neither the type of this nor of *P. diœcum* has been seen.

Two other Brasilian species, *Hymenachne campestris* Nees (of which *Panicum camporum* Kunth is a typonym) and *P. caudatum* Salzm.; and *Panicum interruptum* Willd., of India, and a number of other old-world species of this group are not well enough known to us to be transferred here.

* Fide Sherborn and Woodward in Journ. Bot. 39 : 205. 1901.